BusBlock Densometer Input Module

for the Smart Distributed System

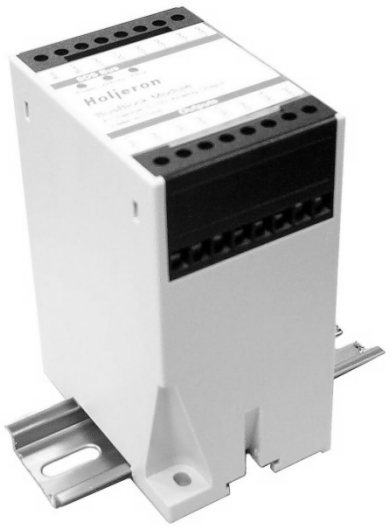
BBK-4056-5 0414 **TECHNICAL DATA**

Description

The Holjeron BusBlock Densometer Input Module is designed to handle a high frequency input in a limited amount of space. The BusBlock Densometer Input Module requires a separate power source for the sensor power.

Field terminations are captive screw terminals. Network status and power LED's aid in monitoring the health of the module.

Other BusBlock products include an eight point configurable digital module; as well as analog input and output modules.



Warranty/Remedy

Seller warrants its products to be free from defects in design, material and workmanship under normal use and service. Seller will repair or replace without charge any such products it finds to be so defective on its return to Seller within 18 months after date of shipment by Seller. **The foregoing is in lieu of all other expressed or implied warranties (except title), including those of merchantability and fitness for a particular purpose.** The foregoing is also purchaser's sole remedy and is in lieu of all other guarantees, obligations, or liabilities or any consequences incidental, or punitive damages attributable to negligence or strict liability, all by way of example.

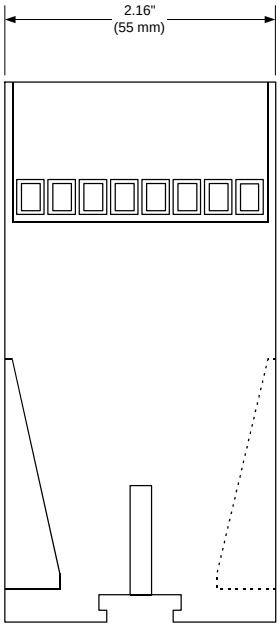
While Holjeron provides application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

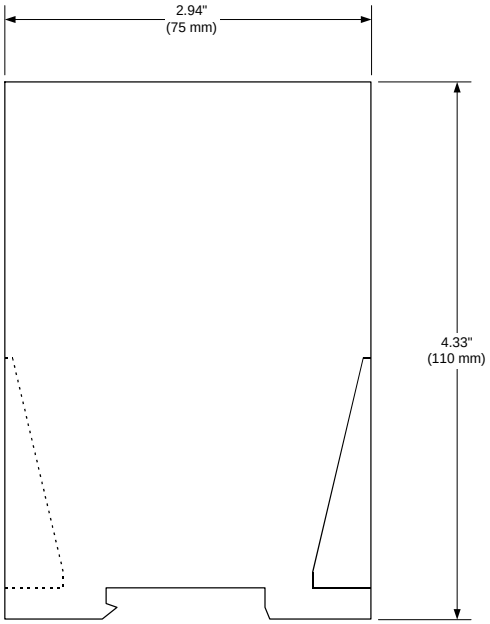
All information contained herein, including illustrations, specifications and dimensions, is believed to be reliable as of the date of publication, but is subject to change without notice.

Specifications

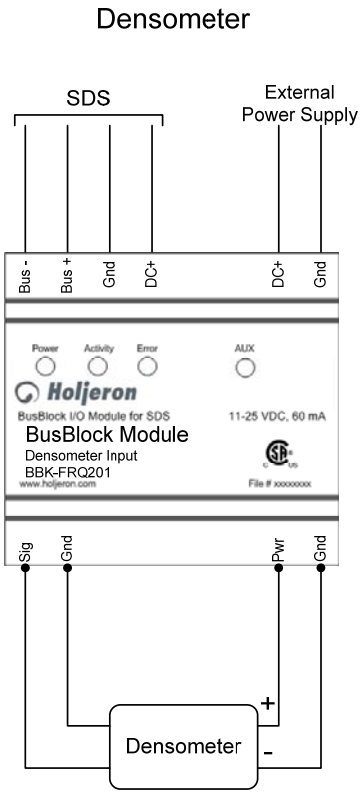
Part Number	4 Channel Frequency Input Module		BBK-FRQ201
Electrical	SDS Voltage Range		11-25 VDC
	Current Consumption		60 mA + analog loop power
	Data Rates		125, 250, 500 and 1000 kbps
Inputs	Type		High Frequency Densometer
	Number		One (1)
	Maximum Frequency		6.4 MHz
	Maximum Sensor Load Power		12 VDC @833mA (10W)
	Maximum Current		20 mA
	Isolation		1500 Vrms
Environmental	Temperature	Storage	-40° to 85° C (-40° to 185° F)
		Operating	-25° to 70° C (-13° to 158° F)
	Humidity		5-95% RH, non-condensing
	Vibration		2G at 10 to 500 Hz
	Shock		10G
Physical	Dimensions		2.95" H x 2.17" W x 4.33" D
	Weight		12 oz
	Color		Bone Gray
	Case Material		Polycarbonate
	Mounting		DIN Rail or foot mount
	Terminations		Cage Clamp Screw Terminal
	Indication	Power	Green
		Error	Red
		SDS	Green
	AUX (Isolated Load Power Present)		Green
Certifications	CSA		C22.2 N0. 14-10
	UL		508 (17th Edition)

Dimensions





Wiring



Configuration Tools

A BusBlock module can be configured using several tools. The information below summarizes the configuration tools available and hardware requirements for each tool.

Holjeron Device Manager for SDS

Requires an HSIM Portable (RS-232 to CAN converter) that connects to the serial port of a personal computer. The bus **or** the HSIM Portable must have power.

Honeywell hand-held activator

The Honeywell activator may not supply enough power by itself. The SDS bus might require external power to be applied.

Think & Do Software

Requires a Honeywell PC Interface Card with separate bus power. Follow the instructions for installing the SDS Driver in I/O View.

Quick Start

The following steps are the minimum steps to configure a BusBlock module. Default values are shown in bold typeface.

Baud Rate

Baud rate selections are as follows:
0 = Autobaud
1 = 1 Mbyte
2 = 500 Kbyte
3 = 250 kbyte
4 = 125 kbyte

Set Device Address

Using one of the tools described above, change the device address from the default. All units are shipped from the factory as **address 126**.

Note

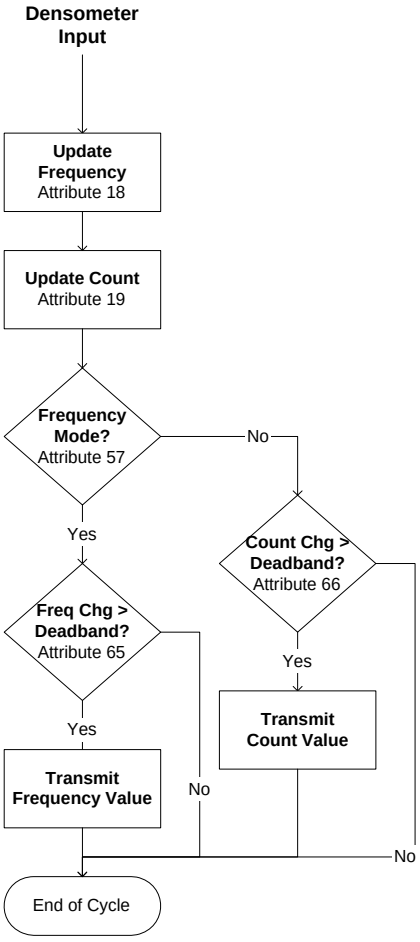
Set the address before attaching any component to a complete bus. This will help prevent duplicate addresses on a bus.

Tag Name

Tag Name (attribute 56) is a 32-character string that the user can enter to describe the functionality and/or location of each channel of the BusBlock Densometer Input Module.

Operation

The BusBlock Densometer Input module converts frequency signals using the process defined below.



Data Mode

The BusBlock Densometer Input Module can be configured to transmit either a frequency value or an actual count. The frequency value (in Hertz) is enabled as the input variable by setting the **Data Mode (attribute 57)** to 1. Setting the Data Mode to 2 causes the module to transmit count data to the host controller. A value of 3 enables both frequency and count to transmitted as input variables.

Note

When using a packaged control system, such as Think & Do Software, it is not necessary to explicitly read input and output variables. The SDS I/O Driver and Interface Card perform this function. All that is required is to map inputs and outputs as described in the software user manual.

Frequency Variable

Attribute 18 functions as the frequency variable for the BusBlock Densometer Input Module. Whenever an event is generated that reports the frequency, the data in attribute 18 will be passed.

Frequency Deadband

A **Frequency Deadband (attribute 65)** can also be set. This will limit events from being sent unless the input variable changes at least as much as the value entered in the Change of Value Deadband. This prevents insignificant changes in the input variable from generating events on the bus. The default value for the Frequency Deadband is 16.

Count Variable

Attribute 19 functions as the count variable for the BusBlock Densometer Input Module. Whenever an event is generated that reports the count, the data in attribute 19 will be passed.

Count Deadband

A **Count Deadband (attribute 66)** can also be set. This will limit events from being sent unless the count variable changes at least as much as the value entered in the Count Deadband. This prevents insignificant changes in the count value from generating events on the bus. The default value for the Count Deadband is **256**.

Input Event Mode

Most systems will require a BusBlock I/O Module to generate an event whenever one or more inputs change state. This requires the **Unsolicit Mode (attribute 6)** be enabled by setting its value to 1, 2 or 3. A value of 1 enables changes in frequency to transmit an event, a value of 2 changes in count, and a value of 3 enables both variables to transmit change of value events. The default value for the Unsolicit Mode is **3**.

Other options are to disable change of value events (Unsolicit Mode = 0) or use the **Cyclic Timer (Attribute 10)** by setting it to some non-zero value. The Cyclic Timer will transmit the input variable on an interval equal to the value in the Cyclic Timer attribute times 10 milliseconds (0.01 seconds).

Diagnostics

The Diagnostics Register (**attribute 9**) is two bytes and contains the minimum diagnostics required for the Smart Distributed System, plus additional diagnostics specific to the BusBlock Densometer Input module.

Diagnostic Register Bit Definitions Byte 0

Bit	Name	Description
0		Reserved
1		Reserved
2	BUSOFF	CAN bus communications error
3		Reserved
4		Reserved
5		Reserved
6		Reserved
7	EPRM	EEPROM error detected

Diagnostic Register Bit Definitions Byte 1

Bit	Name	Description
0	SRVLIFE	Service Life exceeded
1		Reserved
2	IOERR	I/O error
3	SDSPWR	Low SDS Supply Voltage
4		Reserved
5	HILIM	Hi Limit
6	CANOVRN	CAN Overrun
7		Reserved

SDS host controllers are equipped to receive a diagnostic event, then automatically obtain the information from the **Diagnostic Register (attribute 9)**. Consult the documentation for the host controller being used to determine how errors are handled.

BUSOFF

The CAN controller on the BusBlock module counts error messages. Every error message increments a counter by 8, every good message decrements the counter by 1. If the counter reaches 128 then the module will go BUSOFF, and will need to be reset by the host controller.

EPRM

The EPRM error will occur when the microprocessor on the BusBlock module is unable to read or write EEPROM.

SRVLIFE

BusBlock modules are equipped with two attribute settings for managing the service life of the module. The first, **Service Time (attribute 63)** is the number of hours the module has been in operation. The second, **Service Life (attribute 64)** is set by the user, and is the number of service hours before the unit requires maintenance and/or replacement. When the Service Time value reaches the Service Life setting then an SRVLIFE diagnostic is transmitted.

IOERR

The IOERR diagnostic is enabled when the microprocessor on the BusBlock detects that I/O power is not present.

SDSPWR

This diagnostic is set when SDS bus voltage falls below the required level of 11 VDC.

HILIM

The HILIM diagnostic is generated when the scaled input value is above 1,000,000.

CANOVRN

The CAN Overrun error is generated when the buffer is overloaded. Check the SDS bus for bad devices or poor connections.

Attribute 54 – CAN Error Status Codes

0 No error
1 Stuff error
2 Form error
3 Acknowledgement error
4 Bit recessive error
5 Bit dominant error
6 CRC error
7 reserved

Attributes

ID	Description	R/W	Data Type	Size	Count	Default
0	Network Data Descriptor	R	Unsigned	Byte	3	12h,04h,60h
1	Baud Rate	R	Unsigned	Byte	1	0 [autobaud]
2	Object Model	R	Unsigned	Byte	5	1, 42, 5, 5, 4
3	Vendor Id	R	Unsigned	Word	1	9 [Holjeron]
4	Logical Address	R	Unsigned	Byte	1	125
6	Un/solicited Mode	W	Boolean	Undef	2	3
7	Software Version	R	Character	Undef	12	
8	Diagnostic Counter	R	Unsigned	Byte	1	
9	Diagnostic Register	W	Unsigned	Byte	2	
10	Cyclic Timer	W	Unsigned	Word	1	0 [disabled]
11	Serial Number	R	Unsigned	Long	1	
12	Date Code	R	Character	Undef	4	
13	Catalog Listing	R	Character	Undef	32	BBK-FRQ201
14	Vendor	R	Character	Undef	32	Holjeron
15	Description	W	Character	Undef	32	Densometer Input
18	Frequency Variable	R	Signed	Long	1	
19	Count Variable	R	Signed	Long	1	
54	CAN Error Status Code	R	Unsigned	Byte	1	
55	Manufacturing Codes	R	Unsigned	Byte	1	0
56	Tag Name	W	Character	Undef	32	
57	Data Mode	W	Boolean	Undef	2	1 [Frequency]
63	Service Time	R	Unsigned	Word	1	
64	Service Life	W	Unsigned	Word	1	5000
65	Frequency Deadband	W	Unsigned	Word	1	16
66	Count Deadband	W	Unsigned	Word	1	256

Actions

ID	Description	Request Data	Response Data
0	NOOP	---	---
1	Change Address	New logical address	---
2	Self Test	---	---
6	Clear All Errors	---	---
8	Enroll Logical Device	---	Vendor Id, Serial Number
10	Change Baud Rate	New baud rate (0…4)	---
51	Force State	Attribute Id, Input Variable	---
52	Unforce State	Attribute Id	---
53	Read Attribute Descriptor	Attribute Id	Attribute Id, Attribute Descriptor
57	Password	Password	---
60	Reset Factory Defaults	---	---

Events

ID	Description	Event Data
0	Diagnostic Event	Number of diagnostic bits set in Attribute 9
3	End of Timer	Attribute, Input Variable
6	Change of Value	Attribute, Input Variable